Hydrilla Management in Virginia:
Do the Costs Outweigh the Benefits?

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Oct 2011 Photo

Hydrilla is a Nasty Weed!

"Hydrilla is a nasty weed

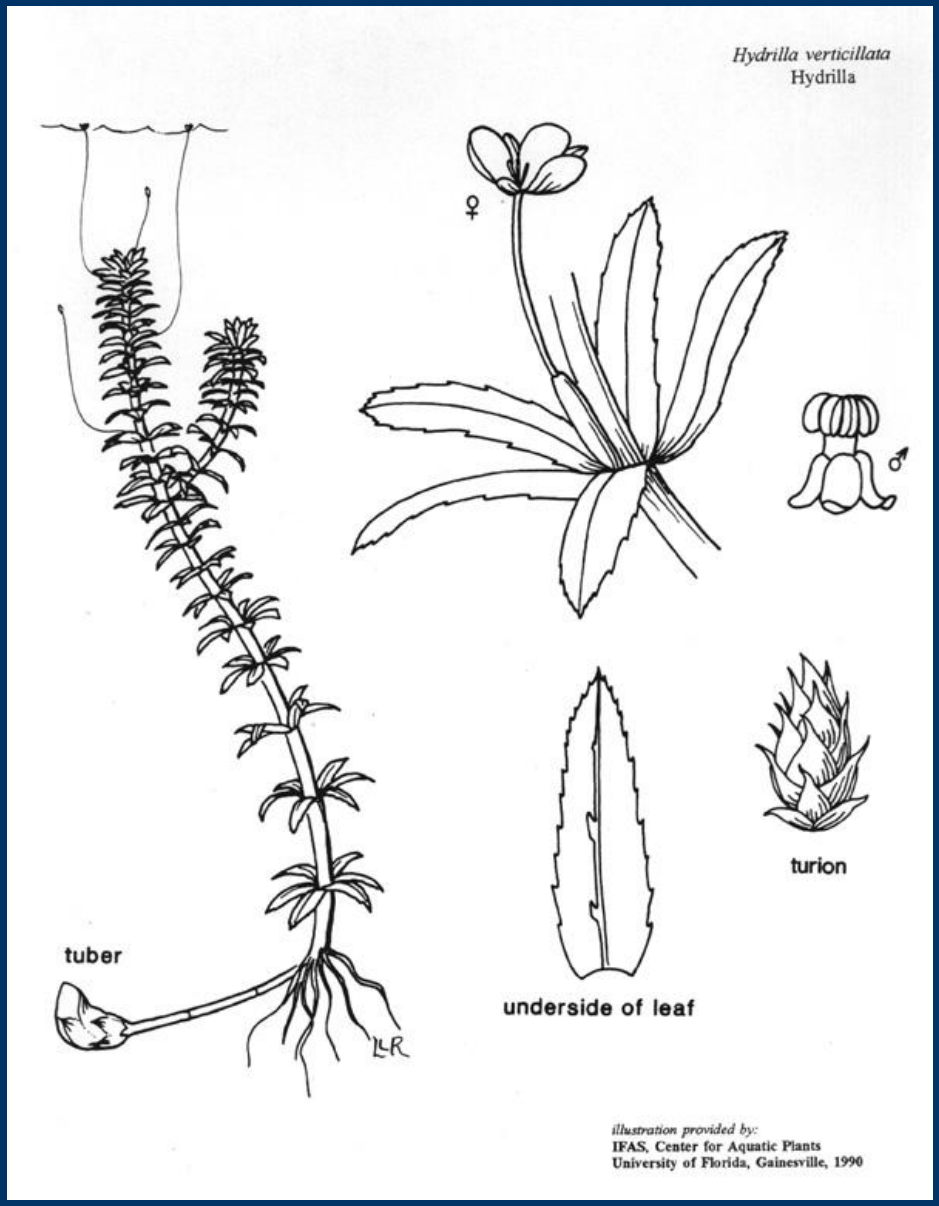
And from Asia it did proceed

It fouls boat props

And tickles swimmer's toes

And where it stops no one knows."

Patterned after Wilbur Roberts Poem (1911) - "Tobacco is a Nauseous Weed"



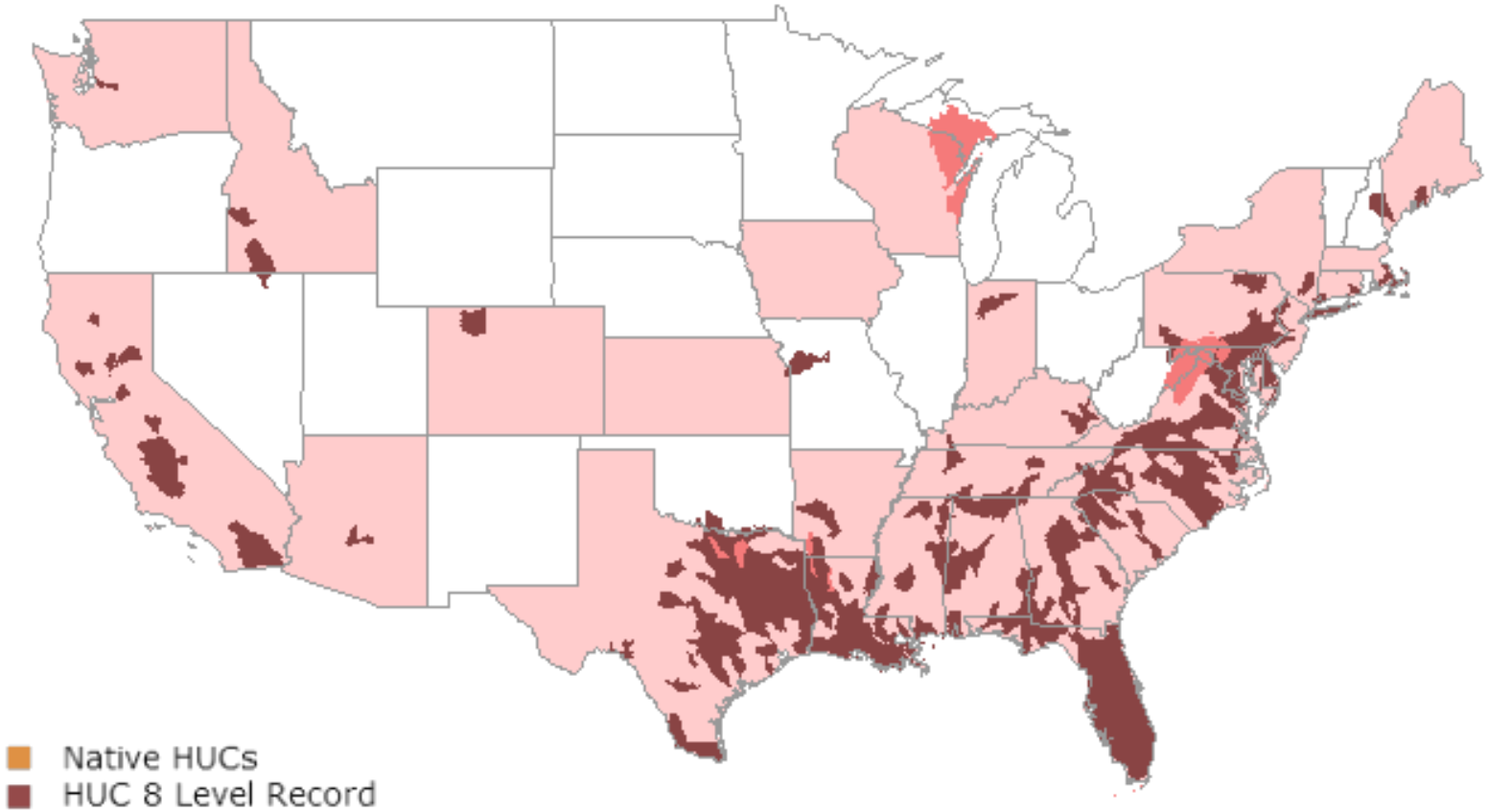
Imported to FL - 1960

Reproduces 4 ways

- Fragmentation
- Tubers
- Turions
- Seed

USGS

Hydrilla verticillata



Map created on 8/4/2011. United States Geological Survey

A Desktop Survey of Hydrilla in Virginia

- **Piedmont - South of the James**
  - **"The list of lakes without hydrilla is shorter!" (Scott Smith)**
    - Lake Gaston, Kerr Reservoir, Smith Mountain Lake, Philpott Lake, Briery Creek Lake, Nottoway Lake

- **Piedmont - North of the James**
  - **"Too many places to list from Richmond to Albemarle" (John Harris)**
    - Rivanna Reservoir, James and Rivanna Rivers
  - **"Hydrilla in every small impoundment in No VA" (John Odenkirk)**
    - Lake Anna, North Anna River, Potomac River, Rappahannock and Rapidan Rivers

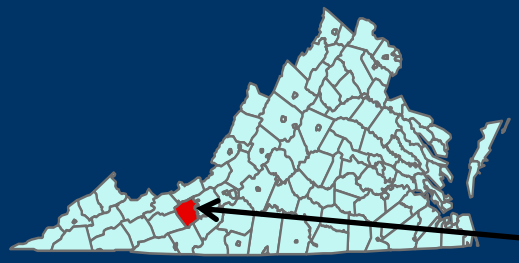
A Desktop Survey of Hydrilla in Virginia

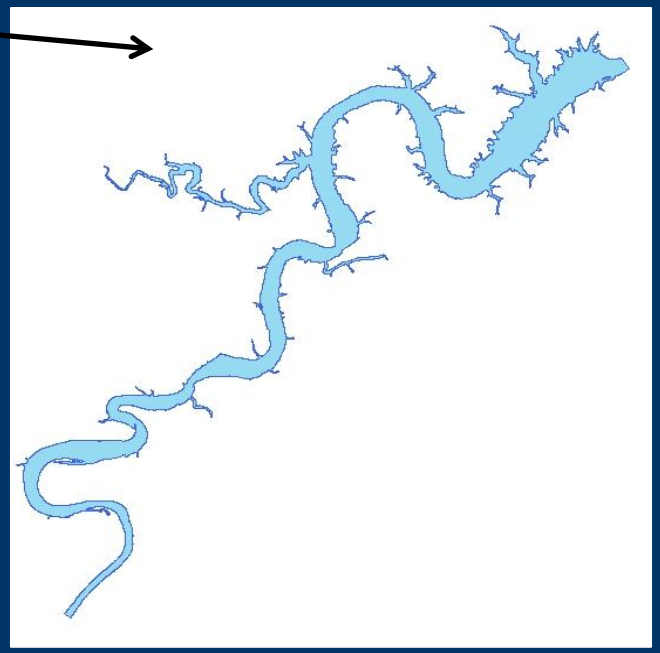
- **Southeast Coastal Plain**
  - **Hydrilla free for now (Chad Boyce)**
  - **Established in Lower Chowan and Western Albemarle Sound in NC**
- **Shenandoah Valley**
  - **Hydrilla free for now (Paul Bugas)**
- **Southwest VA**
  - Claytor Lake and downstream New River (including Bluestone Reservoir in WVA)
  - Spread is likely

Hydrilla Management Challenges in Virginia

- **Agency responsibilities not well defined**
  - No dedicated funding source
  - DGIF involved to protect boating access and habitat
- **Federal noxious weed (not in VA)**
- **User conflicts**
  - Bass anglers, waterfowl hunters, boaters, homeowners
- **Impacts to ecosystem services**
  - Native species decline
  - Loss of ecological diversity

Claytor Lake





- 4,633 acres
- On New River, 21 mi long
- Max width 0.5 miles
- Diverse sportfishery
- Aquatic Vegetation
  - Minor habitat component

- Major natural and economic resource for Pulaski County
  - Influences 20% of county's property values
    - Claytor Lake generates 10% of county's tax revenues
    - $1.4 million in local tax revenue from tourism

- New River downstream = multi-million $ recreation resource
  - Influences economies of 3 counties and 1 city

Claytor Lake Hydrilla Acreage

40

68

394

1,318
(28% of lake)

2003

2007

2011

Unmanaged Potential

Managing Hydrilla in Claytor Lake

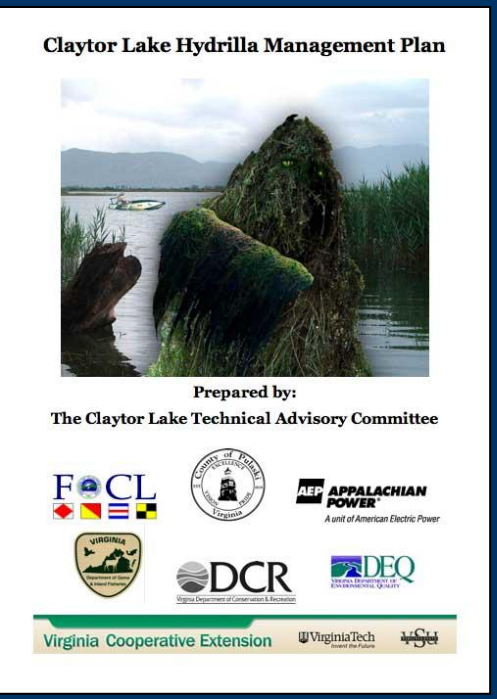
- **Chemical treatments**
  - Upper Claytor started 2004
  - State Park started 2006

- **Comprehensive solution needed**
  - **Claytor Lake Technical Advisory Committee (CLTAC)**

Claytor Lake Technical Advisory Committee

- Public/private partnership
- Friends of Claytor Lake = Boaters, homeowners
  - Sept 2010 = Pulaski Board of Supervisor's hydrilla tour
- Nov - Feb 2011 = CLTAC met bi-weekly
  - Explored Biological, Chemical, Mechanical Control Options
- Chose combination of biological and chemical control

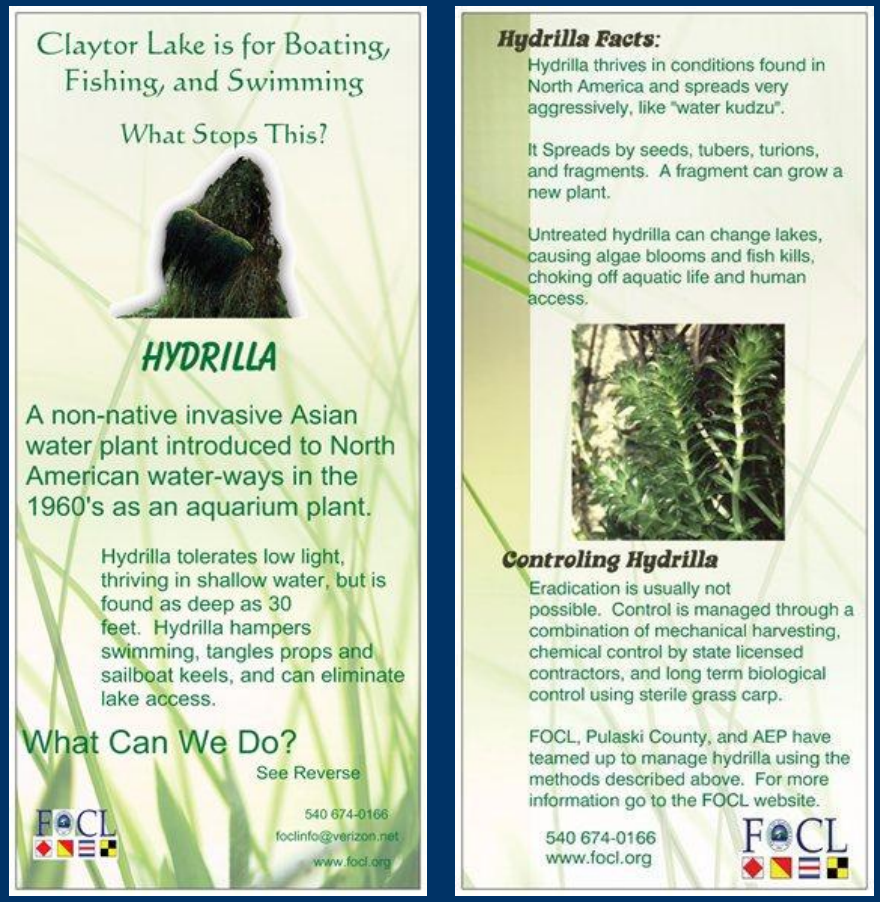
Claytor Lake Hydrilla Management Plan



- **Goal = Reduce hydrilla to < 100 acres**
- **Chemical control** = Appalachian Power $50K
  - Public Use Areas
  - Landowner treatment rebate program
- **Biological Control** = Sterile (triploid) grass carp
  - ***Pulaski County = Purchase grass carp***
  - ***VDGIF = Issue stocking permit, provide assistance***
    - *Grass carp = 6,000 in 2011, 3,200 in 2012*
    - *VT research project (funded by VDGIF)*
- **Outreach program**

Claytor Lake Hydrilla Outreach Materials

Boat Access Signs



Rack Cards and Postcards

Why study grass carp?

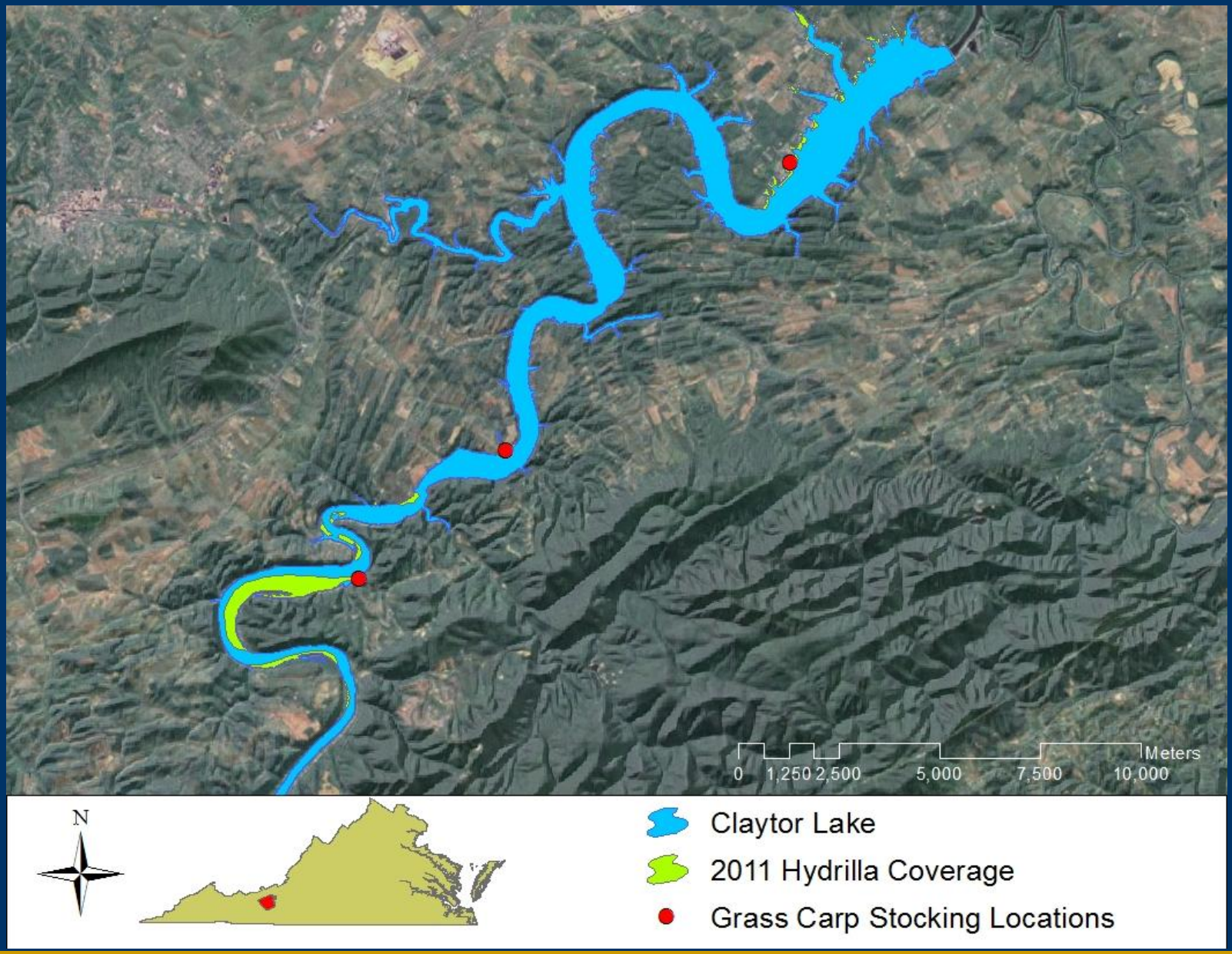
- Unique reservoir
  - Riverine
  - High flow events
  - Open ended
- Information for river advocacy groups, anglers, and waterfowl hunters
- Avoid vegetation eradication

Grass Carp Growth, Mortality, and Movement in a Riverine Reservoir System

Matt Weberg, Brian Murphy, and Andrew Rypel
Department of Fish and Wildlife Conservation
Virginia Tech

VT Research Objectives

- Determine long range movements of grass carp
- Develop grass carp stocking model
- Estimate grass carp growth and mortality
- Evaluate grass carp herbivory on native vegetation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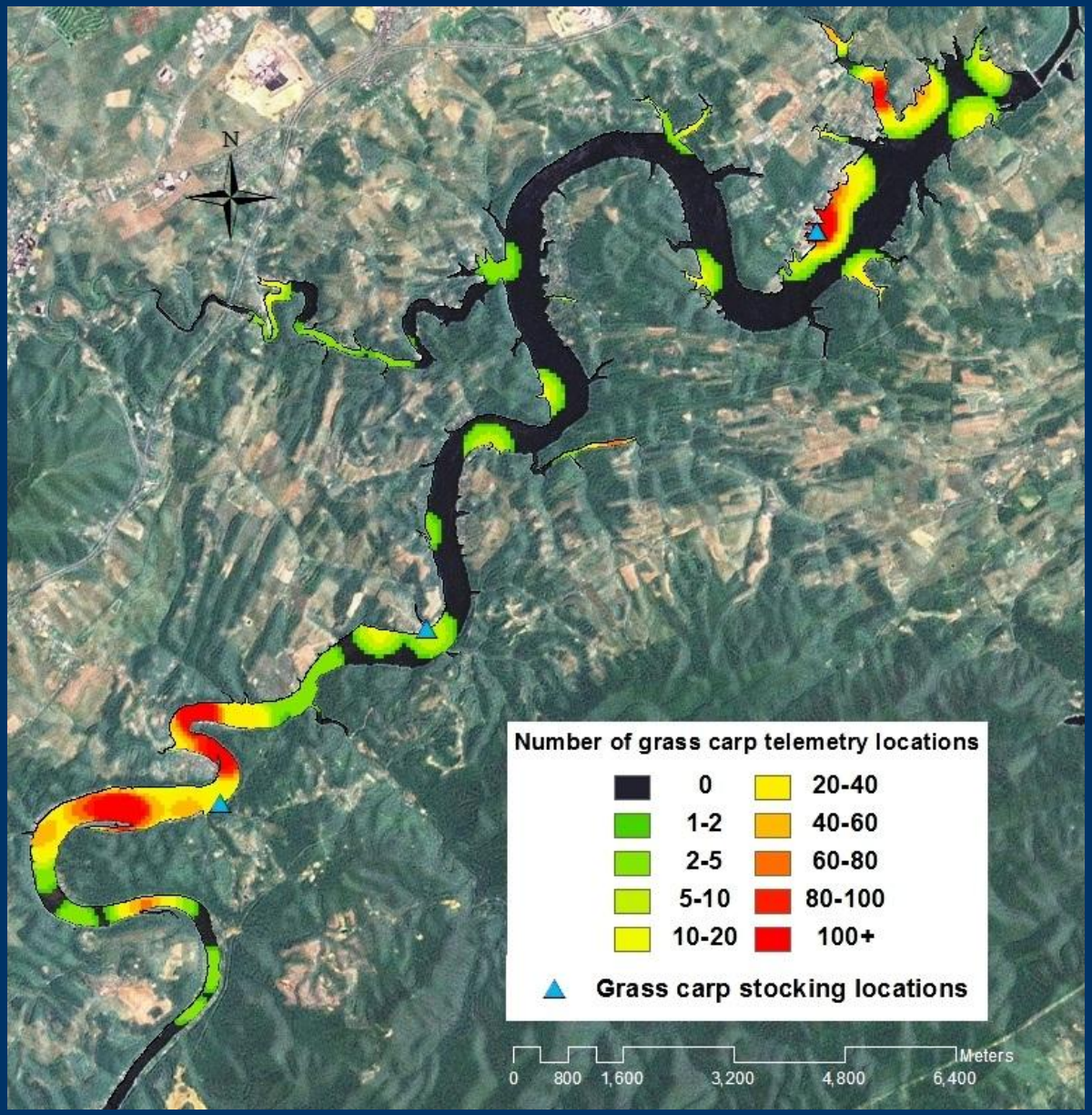
Meters
N
Claytor Lake
2011 Hydrilla Coverage
Grass Carp Stocking Locations



2011 – 34 radio tags

2012 – 45 radio tags

Grass Carp exclosures = Evaluate herbivory impacts

Hydrilla Management at Claytor Lake:
Do the Costs Outweigh the Benefits?

- **Costs**
  - Chemical Control - Year 1 = $50,000
  - Grass Carp - Year 1 = $12,500, Year 2 = $15,300
  - Outreach = Appalachian Power and Friends of Claytor Lake
  - Grass Carp Research – 100% Sport Fish Restoration - $54K/yr (3 Yrs)
  - Hydrilla Acreage Surveys (2007, 2012 = Appalachian Power funded)
- **Total Direct Costs**
  - **Year 1 = $116K; Year 2 = $69K; Year 3 = $54K; Subsequent Years?**

Hydrilla Management at Claytor Lake:
Do the Costs Outweigh the Benefits?

- **Benefits**
  - County tax revenues (Almost $14 million annually - 21% of local RE tax)
  - Recreation-Related Tourism ($1.4 million annually)
  - Fishery Value (2007 = $500K per year direct expenditures)
  - Ecological Value (intangible benefits)

- **Conclusion: Total benefits outweigh costs**


Oct 2011 Photo